H1 Pediatric Sudden Unexpected Death (SUD) Due to Undiagnosed Mediastinal T-Cell Lymphoblastic Lymphoma: A Series of Three Cases

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Learning Overview: After attending this presentation, attendees will understand the pathophysiology and presentation of pediatric mediastinal T-cell lymphoblastic lymphoma and its diagnosis at autopsy.

Impact on the Forensic Science Community: Per this study's research, this is the first case series of undiagnosed mediastinal T-cell lymphoblastic lymphoma leading to SUD in children. This presentation will impact the forensic science community by showing that while pediatric SUD secondary to malignant mediastinal masses is rare, timely diagnosis and treatment may prevent life-threatening complications or death. Mediastinal T-cell lymphoblastic lymphoma, in particular, may be rapidly progressive and potentially fatal if not detected early.

SUD in childhood is a rare phenomenon with a prevalence of approximately 1.4 deaths per 100,000 children. Undiagnosed neoplasms in previously healthy children are rare causes of SUD, with most cases involving the heart or central nervous system.[1] The literature on pediatric SUD due to unrecognized mediastinal neoplasms is limited to a small number of case reports with several cases of mediastinal neoplasms confirmed to be secondary to T-cell lymphoblastic lymphoma.

Lymphoblastic Lymphoma (LBL) is the second most common type of non-Hodgkin lymphoma in childhood. The majority of LBL cases are of T-cell origin. Although T- and B-cell LBL are morphologically indistinguishable, the clinical presentation can potentially help differentiate the two entities. A mediastinal mass is the most typical manifestation of T-cell LBL. Mediastinal involvement is often massive, with a bulky enlargement associated with bilateral pleuro-pericardial effusions.[2] The development of the mass in a limited space results in progressive airway obstruction and can lead to Superior Vena Cava (SVC) syndrome. The clinical presentation is non-specific, with a predominance of respiratory symptoms that are virtually indistinguishable from common respiratory conditions.[3] However, the symptoms are more apparent when the patient is supine and may improve in either the sitting or prone positions.[4] This study describes three cases of previously healthy pediatric patients who suffered SUD attributed to autopsy-diagnosed anterior mediastinal T-cell lymphoblastic lymphoma.

In Case 1, a 2-year-old girl presented with nine days of cough and dyspnea. She was diagnosed with croup, but her symptoms progressively worsened, and she was transferred to a tertiary care center with the diagnosis of status asthmaticus. On admission, she was found in cardiorespiratory arrest. Postmortem examination revealed a firm rubbery mass surrounding the heart, great vessels, and lungs, compressing the bronchi. In Case 2, a 3-year-old girl had been suffering from a respiratory tract infection over several days. On the day of her death, she complained of neck pain and dyspnea. Soon after, the patient went into cardiorespiratory arrest. Autopsy revealed a firm nodular mass in the anterior mediastinum compressing the brachiocephalic trunk, left carotid artery, left subclavian artery, and the superior vena cava. Case 3 involved a 2-year-old boy who was found unresponsive on his stomach in his crib. Per his parents, the child had cold-like symptoms for several days before his death. Postmortem examination revealed a firm, rubbery anterior mediastinal neoplasm surrounding the superior vena cava, both subclavian veins, the aortic arch, and the proximal great arteries. In all three cases, the pathology of the masses was consistent with T-cell lymphoblastic lymphoma.

These three cases show the importance of identifying children with mediastinal masses that could potentially lead to life-threatening presentations and pediatric SUD. When evaluating a child with respiratory symptoms that are exacerbated in the supine position, it is important to consider an anterior mediastinal mass in the differential diagnosis. Additionally, these cases highlight the importance of considering a hematologic neoplasm at the time of autopsy in a previously healthy child who dies suddenly.

Reference(s):

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Pediatric Sudden Unexpected Death, Mediastinal Neoplasm, T-Cell Lymphoblastic Lymphoma

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